AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A liquid ejecting apparatus comprising:

a pressure-generating chamber having an inside space whose volume is changeable, into which a liquid is supplied and which is communicated with a nozzle, a resonance frequency of said pressure-generating chamber having a period of Tc,

a signal-generating unit that generates a driving signal including: a first signal-element for causing the pressure-generating chamber to expand, a second signal-element for causing the pressure-generating chamber to contract from an expanding state thereof in order to eject a drop of the liquid through the nozzle, and a third signal-element for causing the pressure-generating chamber to expand to an original state before outputting the first signal-element after the drop of the liquid is ejected, and

a pressure-generating unit that causes the pressure-generating chamber to expand and contract, based on the driving signal,

wherein

the third signal-element includes:

a first-step element for causing the pressure-generating chamber to expand to an intermediate contracting state, which is smaller than the original state before outputting the first signal-element, and

a second-step element for causing the pressure-generating chamber of the intermediate contracting state to the original state before outputting the first signal-element, and

the first-step element and the second-step element are substantially discontinuous in at least one of applying time or inclination;

wherein a middle-step element for causing the pressure-generating chamber to maintain the intermediate contracting state is provided between the first-step element of the third signal-element and the second-step element of the third signal-element.

2. (canceled).

3. (currently amended): A liquid ejecting apparatus according to claim ~~2~~ 1, wherein:

a time T1 from an end time of outputting of the second signal-element to an end time of outputting of the first-step element of the third signal-element and a time T2 from the end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element satisfy a relationship of $T1 < T2 \times 1/2$.

4. (original): A liquid ejecting apparatus according to claim 3, wherein:

the time T1 from the end time of outputting of the second signal-element to the end time of outputting of the first-step element of the third signal-element and the time T2 from the end time of outputting of the second signal-element to the end time of outputting of the second-step element of the third signal-element satisfy a relationship of $T1 \leq T2 \times 1/4$.

5. (original): A liquid ejecting apparatus according to claim 1, wherein:

a time T2 from an end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element is set to be substantially equal to the period Tc of the resonance frequency of the inside space of the pressure-generating chamber.

6. (original): A liquid ejecting apparatus according to claim 1, wherein:

a time T2 from an end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element is set to be variable depending on the period Tc of the resonance frequency of the inside space of the pressure-generating chamber.

7. (original): A liquid ejecting apparatus according to claim 1, wherein:

an amplitude Vp of the first-step element of the third signal-element is equal to or less than 20 % of an amplitude Vd of the second signal-element.

8. (original): A liquid ejecting apparatus according to claim 7, wherein:

an amplitude Vp of the first-step element of the third signal-element is equal to or less than 15 % of an amplitude Vd of the second signal-element.

9. and 10. (canceled).

11. (original): A liquid ejecting apparatus according to claim 1, wherein:

the pressure-generating unit has a longitudinal-mode piezoelectric vibrating member.

12. (currently amended): A controlling unit that controls a liquid ejecting apparatus including: a pressure-generating chamber having an inside space whose volume is changeable, into which a liquid is supplied and which is communicated with a nozzle, a resonance frequency of said pressure-generating chamber having a period of Tc; and a pressure-generating unit that causes the pressure-generating chamber to expand and contract, based on a driving signal; comprising:

a signal-generating unit that generates a driving signal including: a first signal-element for causing the pressure-generating chamber to expand, a second signal-element for causing the pressure-generating chamber to contract from an expanding state thereof in order to eject a drop of the liquid through the nozzle, and a third signal-element for causing the pressure-generating chamber to expand to an original state before outputting the first signal-element after the drop of the liquid is ejected,

wherein the third signal-element includes:

a first-step element for causing the pressure-generating chamber to expand to an intermediate contracting state, which is smaller than the original state before outputting the first signal-element, and

a second-step element for causing the pressure-generating chamber of the intermediate contracting state to the original state before outputting the first signal-element, and

the first-step element and the second-step element are substantially discontinuous in at least one of applying time or inclination;

wherein a middle-step element for causing the pressure-generating chamber to maintain the intermediate contracting state is provided between the first-step element of the third signal-element and the second-step element of the third signal-element.

13. (canceled).

14. (currently amended): A controlling unit according to claim ~~13~~ 12, wherein:

a time T1 from an end time of outputting of the second signal-element to an end time of outputting of the first-step element of the third signal-element and a time T2 from the end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element satisfy a relationship of $T1 < T2 \times 1/2$.

15. (original): A controlling unit according to claim 14, wherein:

the time T1 from the end time of outputting of the second signal-element to the end time of outputting of the first-step element of the third signal-element and the time T2 from the end time of outputting of the second signal-element to the end time of outputting of the second-step element of the third signal-element satisfy a relationship of $T1 \leq T2 \times 1/4$.

16. (original): A controlling unit according to claim 12, wherein:

a time T2 from an end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element is set to be substantially equal to the period Tc of the resonance frequency of the inside space of the pressure-generating chamber.

17. (original): A controlling unit according to claim 12, wherein:

a time T2 from an end time of outputting of the second signal-element to an end time of outputting of the second-step element of the third signal-element is set to be variable depending on the period Tc of the resonance frequency of the inside space of the pressure-generating chamber.

18. (original): A controlling unit according to claim 12, wherein:

an amplitude Vp of the first-step element of the third signal-element is equal to or less than 20 % of an amplitude Vd of the second signal-element.

19. (original): A controlling unit according to claim 12, wherein:

an amplitude Vp of the first-step element of the third signal-element is equal to or less than 15 % of an amplitude Vd of the second signal-element.

20. - 21. (canceled).